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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,148	08/01/2006	Yoshihisa Suda	1009682-000160	5044
21839	7590	11/23/2009	EXAMINER	
BUCHANAN, INGERSOLL & ROONEY PC			YANCHUK, STEPHEN J	
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ALEXANDRIA, VA 22313-1404			ART UNIT	PAPER NUMBER
			1795	
			NOTIFICATION DATE	DELIVERY MODE
			11/23/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/588,148	SUDA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	STEPHEN YANCHUK	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 16 July 2009.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 63,73 and 145-171 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 63,73 and 145-171 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>6/02/2009</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____ .

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 153, 162, 167, 169 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The applicant has not established how a control method is to be used. Also to state "control" means that the limitation can be altered in processing. This claim is also a structure claim and therefore the method limitations do not have patentable weight, but the structure modification is unable to be determined as currently written. "Value" does not have a clear enabling function since it is not defined.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

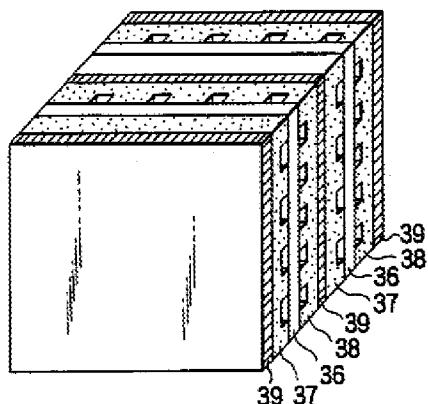
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 63 is rejected under 35 U.S.C. 102(b) as being anticipated by Yonetsu et al (USPAT 6,506,513).

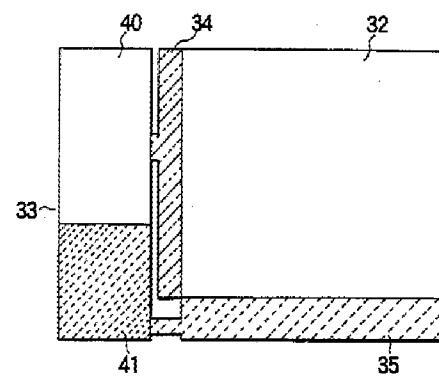
Claim 63 is rejected as stated in the election requirement wherein Yonetsu teaches a fuel cell with an electrolyte membrane sandwiched between a fuel electrode and an oxidant electrode (air). A fuel tank is attached to this fuel cell and utilizes capillary action to introduce fuel into the unit cell [Abstract; Col 4 Ln 26-65]. Figure 14 shows a plurality of unit cells (2) in the system. The fuel tank and fuel cell are hermetically sealed [Col 3 Ln 12].

10. Claims 63, 73 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al (USPAT 5,364,711).

**FIG. 22**



**FIG. 23**



Claims 63 and 73 are rejected by Yamada teaching a plural electrolyte cell (32) as shown in Figure 22 comprising an electrolyte layer (36), oxidizing (air) electrode (38), and fuel electrode (37). A cartridge (33) is depicted in Figure 23 to include a fuel storage area (40) and water-storage (used fuel) area (41) wherein the fuel transfers from the cartridge to the cell via a fuel diffusion chamber (34) and from the cell to the

water-storage area via a water-recovery chamber (35). The capillary materials are taught to be porous materials or fibers [Col 18 Ln34-51] wherein the fibers create a porous material and therefore read on a porous material and fiber material. The fuel diffusion chamber and water-recovery chamber use organic or inorganic fiber wicks to move the fuel/water by capillary motion through the cell [Col 37 Ln 50-Col 38 Ln 54]. The examiner goes on official notice that the fuel tank and fuel lines as presented by Yamada would be sealed to keep contaminants out of the fuel.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim145-171 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra et al. (PGPUB 2004/0072049), and further in view of Yonetsu et al (USPAT 6506513) and Yamada (USPAT 5364711).

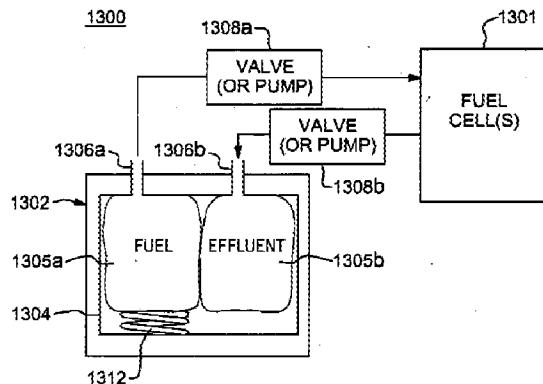


FIG. 13

Claim 145, 151, 157, 165: Becerra teaches a detachable fuel container system that comprises a fuel storage bladder and an effluent (unused fuel, water, other byproducts of the fuel cell system) bladder in one container [Abstract, Figure 13]. The fuel container is connected to a plurality of fuel cells [Figure 13]. The used fuel storing tank (1305b) is hermetically closed except the part connected to valve/pump (1308b) which contains the discharge from the fuel cell [Figure 13]. The valves would be open in order to allow the flow of fuel and byproduct. Becerra fails to teach a feed mechanism comprising capillary materials.

Yonetsu teaches a detachable fuel tank that uses capillary action to draw fuel from the tank to the unit cell. A fuel tank is attached to this fuel cell and utilizes capillary action to introduce fuel into the unit cell [Abstract; Col 4 Ln 26-65]. Figure 14 shows a plurality of unit cells (2) in the system. Porous materials or fine tubes (fibers) are taught to be used in order to achieve this force [Col 4 Ln 5-65]. Yonetsu teaches a feed element that is penetrating into the fuel tank and deposits the fuel at the electrode. It would have been obvious to Yonetsu to modify the bladder of Becerra because Yonetsu

teaches a highly stable feed of liquid fuel to the fuel cell in small devices [Col 2 Ln 33-40].

Yamada teaches a cartridge (33) is depicted in Figure 23 to include a fuel storage area (40) and water-storage (used fuel) area (41) wherein the fuel transfers from the cartridge to the cell via a fuel diffusion chamber (34) and from the cell to the water-storage area via a water-recovery chamber (35). The capillary materials are taught to be porous materials or fibers [Col 18 Ln34-51] wherein the fibers create a porous material and therefore read on a porous material and fiber material. The fuel diffusion chamber and water-recovery chamber use organic or inorganic fiber wicks to move the fuel/water by capillary motion through the cell [Col 37 Ln 50-Col 38 Ln 54]. Yamada also teaches the collector body [Figure 23] wherein it has the same function as claimed. Yamada is relied upon because Yonetsu teaches expelling used fuel from the fuel cell. Yamada enables the mechanism of capillary force for drawing fuel from a tank and sending it back to a waste tank, thus enabling one of ordinary skill in the art to modify Becerra to incorporate capillary force. It would have been obvious for one of ordinary skill in the art to modify Becerra with Yamada because Yamada teaches making a fuel cell smaller by utilizing this natural driving force instead of mechanical [Col 3 Ln 5-Col 4 Ln 14].

Claim 146-147, 153, 158-159, 162, 167, 169: Yamada teaches a water-retaining wick (41) having a smaller average pore diameter than the water-recovery wick (35) [Col 38 Ln 25-28]. It is taught that the smaller the average pore diameter, the increase in capillary force [Col 39 Ln 1-15]. It is also taught to have the force increase from fuel

reservoir area (40) to water-recovery area (41) [Col 39 Ln 29-38]. The feed comprises the same elements of a fuel supplying member and therefore the rejection can be made for the listed claims.

Claim 148, 154, 160, 168: Becerra teaches a detachable tank unit [Abstract Figure 13].

Claim 149: Becerra teaches a valve or pump system attached to the used liquid fuel storing tank that can be open or closed [Figure 13]. The limitation of the used fuel occlusion body is not a positively recited structure claim limitation. The system of Becerra is able to perform the limitation of the used fuel occlusion body in light of Yamada.

Claim 150, 156, 164, 171: Becerra teaches a fuel of methanol [Paragraph 37].

Claim 152, 166: The applicant has claimed the product by how the product was made. Thus, claims are product-by-process claims. For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps. See MPEP 2113. In the present case, the recited steps imply a structure having a collector body. The reference suggests such a product.

Claim 155, 163, 170: Becerra teaches a valve [Figure 13] wherein it can be open or closed.

Claim 161: The fuel occlusion body being an element capillary force is taught to be a fin shape by Yamada [Figure 23].

Claim 161: The fuel occlusion body being an element capillary force is taught to be a fin shape by Yonetsu [Figure 13].

Claim 161: Change of shape and size is not patentably distinct when it would have been within the ability of one of ordinary skill in the art MPEP 2144.04.

Claim 162:

***Response to Arguments***

1. Applicant's arguments filed 7/16/2009 have been fully considered but they are not persuasive. The fuel cell and storage tank presented on page 17 of the applicant's response is not narrowly claimed in claim 63 and 73 as rejected in the previous action.
2. The examiner does not find the arguments pertaining to the argument that Yonetsu does not teach a liquid fuel permeating material and fuel occlusion member persuasive. A fuel occlusion member is claimed to be a porous body or fiber bundle having a capillary force. This is a liquid fuel permeating material by definition which is the same as Yonetsu shown in figure 9a. Yonetsu teaches a fuel storage tank (1) and a fuel supply member (8) that delivers the fuel to the electrodes with a capillary material (8) inside of the tank. Making an element separable does not make the claim patentably distinct over the prior art MPEP 2144.04V.
3. The examiner does not find the arguments pertaining to Yamada as not teaching the elements as claimed persuasive. The fuel supplying member can be interpreted to be the wicking material that supplies the fuel to the fuel cell. As long as this fuel supplying member utilizes capillary forces, it also reads on the limitation of "liquid fuel occlusion body". Yamada also teaches a fuel storage tank, a water storage tank, and

delivery means that utilize capillary forces. Yamada thus correctly rejects claim 63 and 73.

4. The new claims overcome the prior art by claiming a used fuel storing tank that is separable from the supply liquid fuel storing tank. This new matter requires more searching and therefore this action is found as Final.

***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is (571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/  
Examiner, Art Unit 1795

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Supervisory Patent Examiner, Art Unit 1795